CS 254 Course Project

Match Table Lookup Logic (Project 3)

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Implemented a Match table lookup for a router which given a key (lkup_info), returns the data stored in the table and given data(flow_tag) and address (flow_addr), updates the address in the table with the data.

Design details:

- The Match Table was implemented using a Simple dual Port BRAM (one port for writing and the other one for reading data)
- Data is read from each port and parallel lookup is initiated at the first table. FIFOs are maintained at each port as well as the tables for parallel lookup
- Once the offset is found, we search for corresponding data in the 2nd table and if found, return it as matched_flow_tag else return lkup_miss
- For writing the data, we simply go to the address and using a global counter assign it an offset and store the flow_lkup_info and offset in 1st table and data (flow_tag) in the 2nd table against the offset

Important Highlights:

- Parallelizing the lookup helps to fasten up the search process.
- Dual Port RAMs provide the basic infrastructure for implementing memory based features.The memory vanishes once the power is cut off.

Block Diagram

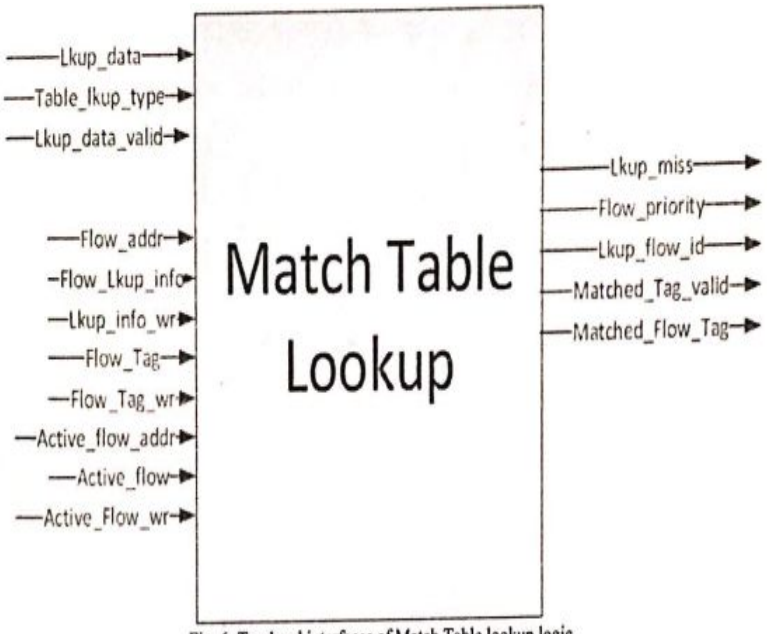

Fig. 6. Top level interfaces of Match Table lookup logic.

Reference - www.gigabitnetworkinglaboratory.org/cs226/resources/bs-jlt.pdf

State Diagram